

**University Health System Protocol for
Tracheostomy during COVID-19 Pandemic
10 April 2020**

This protocol aims to mitigate risk of COVID-19 transmission secondary to tracheostomy procedures and related care. It is based off of current CDC guidelines, national society guidelines, and recent USA experience in the COVID-19 pandemic

Rationale: COVID-19 patients often require prolonged ventilation warranting tracheostomy. Tracheostomy to include associated procedures (bronchoscopy, tracheoscopy, tracheostomy change, and suctioning) is high risk for COVID-19 droplet spread via aerosolization of secretions known to harbor high viral load. The **Department of Otolaryngology-Head & Neck Surgery** developed the following protocol to deliver the highest level of care during the pandemic while mitigating risk of COVID-19 transmission. Elective tracheostomy will be avoided/deferred when medically indicated to reduce overall risk to operative team and hospital staff. **Consideration for pre-operative COVID-19 testing based on test availability, clinical picture and consultation with Infectious Disease COVID-19 team.**

For patients with clinical features that are suggestive of COVID-19 or signs and symptoms of unclear etiology, consult with the Infectious Disease COVID-19 team for recommendations and approval of pre-procedure testing.

For surgical tracheostomy for COVID-19 positive patients and hospitalized patients with unknown COVID-19 status, use the following protocol:

- Surgical tracheostomy should be **considered to be delayed during the acute phase of the COVID-19 infection** whenever possible to allow for a downward trend in viral load
 - Timing to be discussed between surgical and primary team/ICU faculty/Infectious Disease Team
 - Early tracheostomy can be considered in the setting of difficult airways or when early intervention allows discontinuation of ventilator to free up resource. Early tracheostomy should be the exception and must be balanced with the risk of high viral shed by an open airway system when a patient transitions from the closed ventilator circuit to trach collar (see below)
- Reduce operating room team to only essential staff and providers
- N95 (consider PAPR for bearded men), gown, gloves, foot covers and eye protection required by entire team
- Pre-procedural briefing recommended to include anesthesia faculty and OR team
- Technical issues to minimize aerosolized spread:
 - Complete patient **paralysis during procedure** when possible
 - Most senior/skilled surgeon and anesthesiologist on team should perform the tracheal window and airway exchange to ensure that the procedure is safe, accurate, and timely.
 - Cuffed non-fenestrated tracheostomy tube should be used to avoid aerosolizing virus
 - **Cease ventilation** prior to entering trachea and hold until tracheostomy tube in place and cuff inflated
 - Avoid piercing the endotracheal tube cuff when entering the trachea

- After exposure of the trachea and prior to creating the tracheostomy, the ETT should be advanced beyond the anticipated window/entrance point
 - Senior most surgeon and anesthesiologist on the team should perform the tracheal window and airway exchange
- Confirm placement of tracheostomy tube with end tidal CO2 monitor
- HME/bacterial/viral filter should be placed on the tracheostomy tube to reduce the risk of viral shedding while the circuit is temporarily disconnected
- Reconnect circuit in the most expeditious manner
- Ensure no leak from cuff and resume ventilation
- Formal tracheostoma (suturing trachea to skin) discouraged to avoid leak/increased viral spread
- Location of surgical tracheostomy to be determined by OR leadership
 - While bedside procedure eliminates need for transportation, lighting and room space must be taken into consideration
 - An experienced anesthesia team will assist during the procedure in the event that it is done outside of the operating room

Note: Significant consideration was given to bedside percutaneous tracheostomy. The risk of viral shed was deemed significantly higher given the need from bronchoscopy compared to open tracheostomy with paralysis and held ventilation. Only one society worldwide (Scotland) advocated percutaneous tracheostomy; unlike the United States, bronchoscopy was not considered part of their standard practice.

Post Tracheostomy Care

Rationale: When a tracheostomy patient is removed from the ventilator, an open airway is created which carries an increased risk of droplet spread and aerosolization of infectious particles compared to the closed ventilator system

- The **tracheostomy cuff should remain inflated even when patient is off the ventilator** to avoid spread of secretions and associated virus
- PPE with N95 required for tracheostomy care to include suctioning and removal of tracheostomy ties
- A HME/filter/Passy Muir valve should be considered after patient is removed from the closed circuit to minimize viral shed
- **Traditional POD#5 tracheostomy tube change will not be performed**
- **Elective tracheostomy tube changes will not be performed**
- Tube change will only be performed when medically indicated
 - **Inflated, cuffed tracheostomy tube** favored even after patient is off of ventilator
 - Fenestrated tracheostomy tube discouraged
- If tube change is required due to significant leak/ventilator issues
 - PPE to include N95 required for entire team
 - Minimize team members in patient room
 - Hold ventilation during exchange
 - If available, use HME/filter/Passy-Muir valve to reduce viral spread while patient is temporarily off the circuit

- Consider discontinuation of humidified trach collars and nebulizer treatments unless absolute medical necessity

Summary Recommendations:

- **Decision-making in tracheotomy should take into consideration the surgical and ICU team's discretion along with infectious disease expertise as well as institutional policy.**
- **Avoid tracheotomy in COVID-19 positive or suspected patients during periods of respiratory instability or heightened ventilator dependence.**
- **Tracheotomy can be considered in patients with stable pulmonary status but generally should not take place sooner than 2-3 weeks from intubation and, preferably, with negative COVID-19 testing (as dictated by availability and institutional policy).**
- **Adhere to strict personal protective equipment (PPE) protocol based on institutional policy.**
- **Limit the number of providers participating in tracheotomy procedure and post-procedure management.**
- **Maintain cuff appropriately inflated post-operatively and attempt to avoid cuff leaks.**
- **Avoid circuit disconnections and suction via closed circuit.**
- **Place a heat moister exchanger (HME) with viral filter or a ventilator filter once the tracheotomy tube is disconnected from mechanical ventilation.**
- **Consider COVID-19 testing (as dictated by availability and institutional policy) prior to tracheotomy change in the post-operative period.**